Technical Management Team
2003 Year End Review

Water Quality

NUMBER OF EXCEEDENCES AT EACH GAGE DURING 2003 SPILL SEASON

Water Quality Gages	Quantity
Lower Granite Forebay	0
Lower Granite Tailwater	15
Little Goose Forebay	10
Little Goose Tailwater	6
Lower Monumental Forebay	19
Lower Monumental Tailwater	10
Ice Harbor Forebay	35
Ice Harbor Tailwater	4
McNary Forebay - Wa.	24
McNary Forebay - Or.	32
McNary Tailwater	12
John Day Forebay	10
John Day Tailwater	0
The Dalles Forebay	11
The Dalles Tailwater	4
Bonneville Forebay	17
Warrendale	1
Camas/Washougal	33
Chief Joseph Forebay	0
Chief Joseph Tailwater	0
Total Number of Exceedences	**243**

TYPES OF EXCEEDENCES FOR 2003 SPILL SEASON

QUANTITY	TYPE #	DEFINITION
106	6	Exceedence due to uncertainities when using best professional judgement to apply the spill guidance criteria (travel time; degassing; water temperature effects; spill patterns).
68	1	Exceedence due to high runoff flows and flood control efforts.
33	12	Exceedence due to sharp rise in water temperature (a 3 to 5 degree F. change in a day).
20	11	Exceedence due to high TDG levels coming from the Ice Harbor Dam.
18	7	Exceedence due to high TDG levels coming from the Priest Rapids Dam(see Pasco FMS readings).
7	9	Exceedence due to lack of information: the FMS gage was not working and we had no information.
9	10	Exceedence due to mechanical problems (gate was stuck open, passing debris etc.).
1	5	Exceedence due to a break down in communication. Teletype went out but no change occurred or Project operator interpreted teletype differently than what was intended.
0	2	Exceedence due to Intertie line outages.
0	3	Exceedence due to unit outages during repair or maintance.
0	4	Exceedence due to BPA is unable to handle load so they had to spill.
0	8	Exceedence due to a load rejection, the powerhouse was not working and the river was spilled.

Note: Table does not include Dworshak

APRIL EXCEEDENCES AT A GLANCE

	LGNW	LGS	LGSW	LMN	LMNW	IHR	IDSW	MCQW	MCQO	MCPW	JDA	TDA	TDDO	BON	WRNO	CWM
DATE	TYPE OF EXCEEDENCE															
4/12/2003	N/A	N/A	N/A	N/A	N/A	6	N/A									
4/13/2003	N/A	N/A	N/A	6	N/A	6	N/A									
4/17/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
4/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
4/20/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
4/21/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/22/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4/23/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A
4/26/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	9
4/27/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	9
4/28/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	6	N/A	N/A	N/A	6	N/A	6
4/29/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6	N/A	6
4/30/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6

Note: Only days with exceedences are shown.
Blue = gradual melting of snow and gentle rise in river flows.

(All Month)

MAY EXCEEDENCES AT A GLANCE

	LGNW	LGS	LGSW	LMN	LMNW	IHR	IDSW	MCQW	MCQO	MCPW	J DA	TDA	TDDO	BON	WRNO	CWM
DATE	TYPE OF EXCEEDENCE															
5/1/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
5/2/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	7	7	N/A	N/A	N/A	N/A	6	N/A	6
5/3/2003	N/A	N/A	N/A	6	N/A	6	N/A	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/8/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/9/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/11/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
5/12/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/13/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	6
5/14/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A
5/15/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/20/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
5/21/2003	N/A	N/A	N/A	N/A	6	6	N/A	N/A	7	6	N/A	N/A	N/A	6	N/A	6
5/22/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	7	7	6	N/A	N/A	N/A	6	N/A	6
5/23/2003	N/A	N/A	N/A	6	N/A	6	N/A	7	7	N/A	6	6	N/A	N/A	N/A	6
5/24/2003	N/A	N/A	N/A	6	6	6	N/A	7	7	N/A	6	6	N/A	6	N/A	6
5/25/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	7	7	N/A	6	N/A	N/A	N/A	N/A	N/A
5/26/2003	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/27/2003	1	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A	1	N/A	1	N/A	N/A
5/28/2003	1	1	N/A	1	1	N/A	N/A	N/A	N/A	N/A	N/A	1	N/A	1	N/A	1
5/29/2003	1	1	1	1	1	1	1	11	11	1	N/A	6	N/A	6	10	10
5/30/2003	1	1	1	1	1	1	1	N/A	11	1	N/A	N/A	N/A	6	N/A	6
5/31/2003	1	1	1	1	1	1	1	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	6

Blue = gradual melting of snow and gentle rise in river flows (Top)
Orange = Freshet has begun and river flows are high (Bottom).

JUNE EXCEEDENCES AT A GLANCE

	LGNW	LGS	LGSW	LMN	LMNW	IHR	IDSW	MCQW	MCQO	MCPW	J DA	TDA	TDDO	BON	WRNO	CWM
DATE	TYPE OF EXCEE DENCE	TYPE OF EXCE EDEN	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENC	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCE EDEN	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENCE
6/1/2003	1	1	1	1	1	1	1	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	6
6/2/2003	1	1	1	1	1	1	N/A	11/12	11/12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/3/2003	1	1	1	1	1	1	N/A	11/12	11/12	N/A	1	1	N/A	1	N/A	1
6/4/2003	N/A	1	N/A	1	N/A	1	N/A	11/12	11/12	N/A	1	N/A	N/A	1	N/A	1
6/5/2003	N/A	1	N/A	1	N/A	1	N/A	11/12	11/12	N/A	6	6	N/A	6	N/A	6
6/6/2003	N/A	1	N/A	1	N/A	1	N/A	11/12	11/12	N/A	6	6	6	6	N/A	6
6/7/2003	N/A	N/A	N/A	6	N/A	6	N/A	11/12	11/12	N/A	6	6	6	6	N/A	6
6/8/2003	N/A	N/A	N/A	6	N/A	6	N/A	11/12	11/12	N/A	6	6	6	6	N/A	6
6/9/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	11/12	11/12	N/A	6	N/A	N/A	N/A	N/A	N/A
6/13/2003	N/A	N/A	N/A	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/15/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
6/16/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6
6/17/2003	N/A	N/A	N/A	6	N/A	6	N/A	7/10	7/11	N/A	N/A	6	6	6	N/A	6
6/18/2003	N/A	N/A	N/A	6	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/19/2003	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/28/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7/12	7/12	N/A	N/A	N/A	N/A	N/A	N/A	6
6/29/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7/12	7/12	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Orange = Freshet has begun and river flows are high (Top).

Yellow = Sunny climate and solar radiation is increasing water temperatu
(Bottom).

JULY EXCEEDENCES AT A GLANCE

	LGNW	LGS	LGSW	LMN	LMNW	IHR	IDSW	MCQW	MCQO	MCPW	J DA	TDA	TDDO	BON	WRNO	CWM
DATE	TYPE OF EXCEE DENCE	TYPE OF EXCE EDEN	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENC	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEED ENCE	TYPE OF EXCE EDEN	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENCE	TYPE OF EXCEED ENCE	TYPE OF EXCEE DENCE
7/5/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/6/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/7/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/11/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/15/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/20/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/21/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/22/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/23/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/29/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/30/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Yellow = Sunny climate and solar radiation is increasing water temperatur
(All Month)

AUGUST EXCEEDENCES AT A GLANCE

	LGNW	LGS	LGSW	LMN	LMNW	IHR	IDSW	MCQW	MCQO	MCPW	J DA	TDA	TDDO	BON	WRNO	CWM
DATE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDEN	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENC	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDEN	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE	TYPE OF EXCEEDENCE
8/14/2003	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/15/2003	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/16/2003	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/17/2003	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/18/2003	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/19/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/20/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/21/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/22/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/25/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9
8/26/2003	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9

Gray = Sunny climate with low river flows making mechanical repairs poss
(All Month)

EXCEEDENCES AT DWORSHAK DAM DURING 2003 SPILL SEASON

DATE	#of Hours	TDG Levels (Percent)	Type of Exceedence	Cause
4/10/2003	3	110.1 to 110.4	1	Exceedence due to high runoff flows and flood control effort
4/15/2003	1	110.1	1	Exceedence due to high runoff flows and flood control effort
6/10/2003	2	110.4	8	The transmission people of BPA required a cutback on generation and for a 5 hour period the large unit was at reduced generation,and not operating at optimum levels which generated higher TDG.
6/24/2003	1	111.4	5	The schedule(teletype) called for 190 MW (2 small units almost fully loaded), however the project chose to run the big unit (300 MW) at a reduced capacity. This caused a spike in TDG due to an inefficient loading of the unit.
7/12/2003	1	111.7	3	The switchgear and transformer for the 5 KV equipment needed to be upgraded to meet code. This is a safety issue. In order to do the repair the selector gates are required to be set in undershot mode. An exceedence occurred while turning the units off
7/21/2003	3	110.4 to 111.3	3	After the switchgear and transformer for the 5 KV equipment repair, the selector gates needed to be set in overshot mode. An exceedence occurred while turning the units offto move selector gates.
TOTAL	**11**			

COMPARISON OF EXCEEDENCES WITH PREVIOUS YEARS

(TDG EXCEEDENCES OF HIGH 12 HR AVERAGE)

Year	Days In Spill Season	Number of Days Exceeded	Percent Exceeding TDG Standard (%)	Percent In Compliance With TDG Standard (%)
2003	2760	243	8.8	**91.2**
2002	2760	490	17.8	**82.2**
2001	2760	13	0.5	**99.5**
2000	2760	269	9.7	**90.3**
Before 2000	Exceedences were not tabulated.			
Note: Number of Spill Days are based on 20 gages X 138 days from April 15 - August 31.				

Year	Days In Spill Season	Number of Days Exceeded	Percent Exceeding TDG Standard (%)	Percent In Compliance With TDG Standard (%)
2003	2844	243	8.5	**91.5**
2002	2864	490	17.1	**82.9**
2001	2005	13	0.6	**99.4**
2000	2932	269	9.2	**90.8**
Before 2000	Exceedences were not tabulated.			
Note: Number of Spill Days are based on 20 gages X days between April 3 - August 31 when spill actually began.				

DWORSHAK GATE INFORMATION

Type of Discharge Outlet	Maximum Discharge Rate (kcfs)	Elevation Selector gates can be placed at		Elevation that units pulls water from	
		Undershot mode (ft)		Overshot mode (ft)	
		Elevation	Pulls water	Elevation	Pulls water
1	2.5	1435 only	in a 40 ft swath	1465 to 1610	in a 40 ft swath
2	2.5	1435 only	in a 40 ft swath	1465 to 1610	in a 40 ft swath
3	5.9	1435 only	in a 60 ft swath	1465 to 1610	in a 60 ft swath
RO	7.7	1350	in a 40 ft swath	N/A	in a 40 ft swath
RO	7.7	1350	in a 40 ft swath	N/A	in a 40 ft swath
RO	7.7	1350	in a 40 ft swath	N/A	in a 40 ft swath
Spillway	181	1545 ft only		1545 ft only	

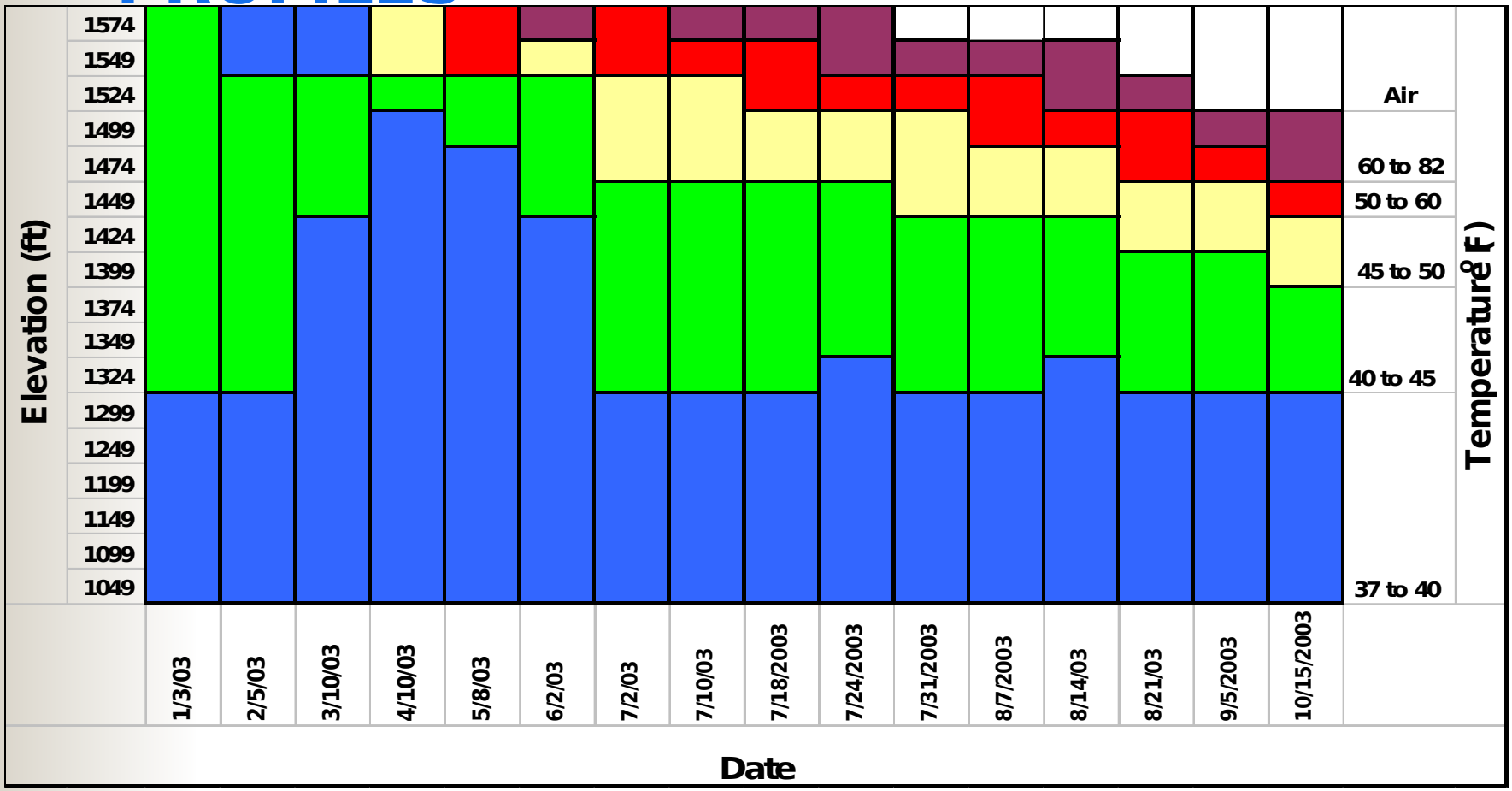
DWORSHAK OUTFLOW

Dates	Outflows Range (KCFS)	Ave. Outflows (KCFS)
July 3 - July 6	5.3 - 2.2	4.6
7-Jul	9.6 - 9.4	9.5
July 8 - July 23	14.0 - 12.7	13.6
July 24 - Aug 4	12.2 - 11.2	12.0
Aug 5 - Aug 18	10.2 - 9.8	10.1
Aug 19 - Sept 11	8.4 - 5.6	7.2
Sept 12 - Sept 14	6.1 - 2.1	4.7

DWORSHAK OUTFLOW TEMPERATURES

Dates	Temperature Range (F)	Ave. Temp. (F)
June 13 - July 1	52.2 - 51.0	51.6
July 2 - July 11	48.9 - 47.6	48.3
July 11 - July 21	46.5 - 45.2	45.8
July 21 - Sept 12	45.9 - 44.5	45.2

DWORSHAK TEMPERATURE PROFILES



Anatone, Dworshak and Lower Granite Tailwater Hourly Temperature Data